

**TIRE INFLATION SYSTEM APPARATUS AND METHOD****ABSTRACT**

5 A tire inflation system includes an air supply source in selective fluid communication with a tire via a pneumatic conduit. A method of inflating the system includes providing a tire pressure retention valve in the pneumatic conduit adjacent to the tire. An inflation pressure of the tire is determined with a step-up procedure, in which air bursts are communicated from the air supply source to a portion of the pneumatic conduit between the air supply source and the tire pressure retention valve. The volume of at least one selected communicated air burst is related  
10 to a volume of a section of the conduit. The tire is inflated with an extended-pulse procedure, in which extended bursts of air are communicated from the air supply source to the tire. A shut-down sequence is performed once a predetermined target inflation pressure in the tire is reached.